

Chair, Members of the Committee:

My name is Jerry J. Bromenshenk and I reside at 200 Rimrock Way, Missoula Montana

I am here to speak against SB 216 and to answer your questions. I am an internationally recognized expert in honey bees, bee pests and diseases, and pesticides. I am partially retired from a Professorship at The University of Montana, and I co-own a Montana-based business specializing in bee-related services, contract research, and new products for efficient and effective bee management. I come from a ranch background in eastern Montana, and I have spent more than 40 years researching honey bee issues, especially those factors that negatively affect bee health and colony viability. I also established and teach Montana's Master Beekeeping Courses through the University of Montana.

**Re: Senate Bill 216: A BILL FOR AN ACT ENTITLED: "AN ACT REVISING REQUIREMENTS FOR LANDOWNER APIARY SITES"**

This bill although well-meaning is unnecessary and represents a misunderstanding of the primary purpose of Montana's Apiary Registration Act. I find this particularly troubling given the current problems faced by the US with respect to maintaining sufficient numbers of healthy bee colonies to pollinate many of our nation's crops. Since 2006, US bees and their keepers have been vulnerable to periodic, catastrophic losses of colonies from a syndrome called Colony Collapse Disorder. Now, in 2013, following the widespread draughts of 2012, we are once again seeing shortages of bees for pollination and sky-rocketing prices for colony replacement. In addition, beekeepers now routinely see annual losses of 30% of their colonies compared to the expected 5-10% over-wintering losses of previous decades.

Forty years ago, when I began conducting research on honey bees, a basic course in the management of bees and an application of antibiotic in the spring to suppress foul brood disease was about all one needed to have healthy colonies and to collect a good honey crop. Today, beekeepers and their bees are faced with tracheal and varroa mites, hive beetles, a particularly aggressive fungal pathogen called *Nosema ceranae*, more than 20 common bee viruses, a greatly expanded array of pesticides and much more frequent use of these chemicals, the stresses of moving bees long-distances for pollination, significant declines in the availability of the diverse vegetational habitats that bees need for good nutrition and to produce honey crops, and in the southern states, the spread of the very aggressive Africanized bee.

Historically, bee laws were put in place primarily as a means of controlling the spread of bee diseases, especially the foul broods. Weak and sick colonies are robbed of their food stores by strong colonies, and the robber colonies are subsequently infected with any and all of the pests and diseases in the plundered colonies.

Bees are far ranging in their foraging, and the 3 mile limit established by the Montana registration law reflects research-based studies that show that although the average foraging distance of bees from a hive varies from 1-2 miles, the majority (95%) of bees from a colony are found within 3.75 miles. My own research indicates that when food sources are readily available, bees readily forage out to 2 miles, but by 3 miles the numbers of bees tend to fall off dramatically. Under limited resource conditions, however, bees will forage up to 4-5 miles, and under severe conditions like the draught of last summer, bees can go 8.5 miles for pollen and nectar.



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My point is that the current 3 mile limit is a reasonable spacing to reduce the chance of spreading bee pests and diseases. Two miles is too close, and 3 miles isn't fool proof, but this distance has been proven to be effective. Case in point, although several large Montana bee operations have had severe collapses of bees starting in 2006, I've not seen any evidence of spread to neighboring bee operations in Montana. I have seen spread when Montana bees are close to other bees in other states.

A spacing requirement between apiaries benefits bees and beekeepers, from the hobby beekeeper and community gardens with one or two colonies, through the mid-sized bee operations of up to a hundred or more colonies, to the large scale commercial agriculture beekeeping companies with a thousand or more colonies.

Current Montana law exempts small scale, hobby beekeepers with a few hives from both the registration and spacing requirements. Apiaries of more than 10 colonies must be registered and the three mile spacing rules apply. These rules serve four major purposes:

- Reduce the risk posed to healthy bees by sick and weak colonies that serve as the source of infection and infestation by bee diseases and pests,
- Prevent over-stocking of the number of colonies relative to available food resources so as to ensure sufficient ' forage range' to maintain nutritionally healthy colonies and a reasonable expectation of making a profitable honey crop,
- Provide a practical means for growers and pesticide applicators to notify a reasonably limited number of beekeepers prior to spray applications, and
- Reduce conflicts between beekeepers, landowners, growers, and the public.

In many ways, the Montana Apiary Act put into place in 1947 is analogous to the Taylor Grazing Act established in 1934. When there was abundant unsettled rangeland, the practice of grazing was rarely disputed. But as the population of the western states increased, range wars erupted and rangelands deteriorated from overuse. In 1934, the Taylor Grazing Act set out the federal government's powers and policy on grazing federal lands. The Taylor Grazing Act applies to grazing on Bureau of Land Management lands. The US Forest Service is authorized to permit or suspend grazing on Forest Service administered property, and many Forest Service grazing regulations resemble those of the Taylor Grazing Act.

Similarly, the Montana Apiary Act served to reduce disease spread and conflicts. With increasing pressure from sprawl, habitat fragmentation, monocultural crops, and more wide-spread use of pesticides, beekeepers are finding it increasingly difficult to find areas with sufficient good quality forage for their colonies. Like cattle, there is a limit to how many colonies can be sustained by a given acreage of crop, riparian, and rangeland habitats.

I conduct research all over the world. I have found that states and countries that do not have rules establishing minimal spacing between apiaries see more rapid spread of pests and diseases, reduced bee health and increased colony loss, reduced honey yields when too many colonies are present in an area, and increased conflicts between beekeepers, growers, pesticide applicators – some of which end up in lengthy and costly litigation.

The current bee law in Montana affectively allows landowners to have multiple bee colonies. But they should not be exempted from the rules that protect the health and productivity of the bees of all Montana beekeepers, whether small or large. The current law is more than adequate and does not need changing.

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future. The author points out that the study of history is not only a means of acquiring knowledge, but also a means of developing a sense of responsibility and a sense of civic duty.

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## Honey Bee Flight Metrics

Foraging radius from the hive varies with the availability of pollen and nectar food resources. When forage is of good quality and plentiful, bees work fields closest to the hive. When conditions are poor, such as drought, bees will readily forage out to 4-5 miles, and can go as far as 8.5 miles, with occasional bees seen as far as 12 miles away from the hive.

Based on several studies by different investigators, bees are most often found within 1 mile of the hive, with a median distance of 1-1.6 miles, and an average of 1.4-2.2 miles. Maximum effective foraging distance for most of the foragers is 5.6-6.8 miles.

Bees fly at 12-25 miles per hour when going from and coming back to the hive. Reportedly, a bee carrying a full load of nectar or pollen is likely to fly at a slower rate. Our own data at 2 miles from the hive showed that heavier loads did not have much of an effect, and that the time bees spend orienting to find their way to the field site and when ready to go back home, as well as waiting to land at the hive was a significant part of the time factor for round trips. Once lined out to fly, bees covered the 2 miles in record time, taking about 4-6 minutes to cover the intervening distance.

In terms of the food resources utilized, the acres covered at different flight distances from the hive are:

1 Mile	2,011 Acres	1 Section = 640 acres = 1 sq mile.
2 Mile	8,658 Acres	
3 Mile	18,092 Acres	
4 Mile	32,166 Acres	

The 3 Miles Spacing Established by the Montana Apiary Act encompasses 28.3 square miles, with a circumference of 18.9 miles.

In any given area, the maximum density of apiaries at 3 miles of separation is 6.

1. The first thing I noticed when I stepped out of the plane was the fresh air. It felt like I had been breathing stale air for years. The sun was shining brightly, and the birds were singing. I felt like I had been reborn.

2. I had heard that the weather was perfect, but I didn't realize how perfect it would be. The temperature was just what I needed. It was a relief to be in a place where the weather was so good.

3. The food was also amazing. I had heard that the food was good, but I didn't realize how good it would be. The chef was a professional, and the food was delicious. I had never tasted anything like it before.

4. The service was excellent. The staff was friendly and helpful. They made me feel like I was a special guest. I had never experienced such good service before.

5. The location was perfect. It was in a beautiful area with a lot of things to see and do. I had heard that the location was good, but I didn't realize how good it would be.

6. The overall experience was amazing. I had heard that the experience was good, but I didn't realize how good it would be. I had never experienced anything like it before.

7. I had heard that the experience was good, but I didn't realize how good it would be. I had never experienced anything like it before.